CALIFORNIA COASTAL COMMISSION
LCP PLANNING
GRANT APPLICATION FORM
SEPTEMBER 5, 2013

For Fiscal Year 2013-2014, Governor Brown and the California Legislature approved an augmentation of $1 million to the California Coastal Commission's budget to support local governments responsible for planning under the California Coastal Act (Coastal Act) to develop or update Local Coastal Programs (LCPs). A full description of the grant program is available http://www.coastal.ca.gov/lcp/lcpgrantprogram.html.

Coastal Commission staff is available to work with local governments and to assist you during the application process. Please note the entire grant application will be public record upon submittal. Click in the shaded text fields to enter text, numbers and dates. The fields will expand to accommodate the data. Press the tab key to move between fields.

APPLICANT INFORMATION

Applicant name (organization): Marin County Community Development Agency

[redacted]

PROJECT INFORMATION

Project title: **C-SMART: Collaborating on Sea-level Marin: Adaptation Response Team**

LCP/ LCP Segment: Marin County Units 1 and 2

Project location: City / Geographic area: West Coast of Marin County: Marin

Project timeline: Start date:2/3/14 End date: 6/30/16

MAPS AND PHOTOS

Please see Exhibits 1A, 1B, 1C.

APPLICATION MATERIALS

1. PROJECT DESCRIPTION.

a. Goals and objectives:

The overall goal of the project is to develop a sound scientific and technical basis for evaluating the changes that sea level rise will bring to the coast, develop potential responses, and integrate those into Marin's Local Coastal Program. The project is consistent with, and would help carry out the goal as stated in Policy C-EH-22 included in the County's pending LCP Amendment (Exhibit 2, page 2). We will accomplish this goal by achieving the following four objectives, as further described in the Project Details below and elaborated on in Exhibit 2, "Collaborating on Sea-Level Marin: Adaptation Response Team."

i. Develop robust scenarios for assessing the changes that sea level rise will bring through the Exposure and Sensitivity Assessments.
ii. Evaluate potential impacts of such changes through Potential Impacts, Adaptive Capacity and Risk and Onset Assessments.
iii. Identify a range of suitable responses to these impacts though the Prioritize Adaptive Needs and Identify Strategies steps, and
iv. Plan for the implementation of programs and measures, including Amendments to the Local Coastal Program (LCP) through the Evaluate and Prioritize and Phase and Implement work elements.

The project is designed to engage both the Planning Commission and the Board of Supervisors at key points in the process so that they are knowledgeable and confident about LCP Amendments when they are called upon to act at the projects conclusion.

This application reflects the state Ocean Protection Council's very recent decision to partially fund Marin County's program ("OPC Grant"). Recognizing the limited funding and undoubtedly high demand for Coastal Commission funds, we would utilize the OPC grant, along with an increased match of our own limited resources, to accomplish objectives "i" through "iii." The Commission's LCP Planning grant ("CCC Grant") will primarily focus on objective "iv." This will enable Marin County to integrate crucial science-based analysis into an active public process to develop effective policy responses consistent with the Coastal Act that can be successfully implemented through the LCP over the long term.

Marin County's coast is a perfect testing laboratory for grappling with sea-level rise and related climate change issues. Its diverse biological resources, varied topography and highly susceptible human habitation and infrastructure present a full range of the challenges that will need to be faced all along the California coast.
The project is consistent with the steps described in the draft GUIDANCE FOR LOCAL COASTAL PROGRAMS released by the Commission Oct. 14, 2013. The work covered by the OPC grant will accomplish Steps 1 through 3, determining appropriate sea-level projections, identifying potential physical impacts and assessing potential risks. The CCC grant will

complement our effort to identify and evaluate adaptation measures with a particular focus on legal and regulatory approaches such as managed retreat, new development standards and controls on redevelopment in hazard areas.
Just as important, the grant will support the vigorous legal analysis, technical advisory and public involvement process for Step 5, updating and certifying the LCP. This work is not only mandated by the Coastal Act, but is absolutely essential to the effectiveness and success of new LCP policies to respond to, monitor and re-evaluate sea-level rise changes into the future.

b. Project details:

To maximize the transferability of our work, our project uses the framework of the *California Adaptation Planning Guide,* which is specifically intended to be used by local governments and regional organizations. The individual steps prescribed in the *Guide* are extensively described in Exhibit 2, section C, and detailed below in response to the categories set out in the Grant application

The details of the project are:

1. **The Public Involvement process**, designed to engage the entire community throughout the process, assisted by a Stakeholder Advisory Committee (SAC) of both directly affected and actively interested representatives, and a Technical Advisory Committee (TAC), to bring the best available science, information and analytical insight to the effort. In addition to general public meetings and meetings of the SAC and TAC, traditional media, social media, and the highly successful LCP website will all be employed to inform and learn from the public. Continuous contact and individual meetings with the public will also be used to assure full participation and understanding of the process. Both the Planning Commission and the Board of Supervisors will be brought along as the project proceeds so that they are informed and comfortable making decisions on potential SLR LCP Amendments. CCC grant funds will be substantially focused on these efforts.
2. **The Vulnerability Assessment**. This project has the particular advantage of partnering with the Our Coast–Our Future Project (OCOF), which will deploy new, high resolution scientific tools that model the full range of effects of sea level rise and storm hazards, including factors such as water levels, wave heights, flooding, and erosion, which are not available in most other datasets. This modeling will be supplemented with data and analysis that will derived from FEMA's Open Pacific Coast Study and flood modeling from the Stinson Beach Flood Protection and Watershed Program that has conducted two-dimensional riverine flood modeling of Easkoot Creek, a tributary to Bolinas Lagoon that runs through Stinson Beach. The coastal resource exposure assessment will specifically include analysis of extreme events (which OCOF is uniquely capable of modeling), combined flooding (from the watershed and the sea) and geomorphic evolution. All of this will be combined with the County's parcel level GIS land use data and additional data developed through the public involvement process to assess the vulnerability of natural systems such as coastal wetlands, beaches, dunes and oysterbeds, and critical coastal and community assets including visitor accommodations, Highway 1, public facilities, businesses and homes. This work will primarily be funded by County resources, other matching contributions and the OPC Grant.
3. **Adaptation Strategy Development.** Based upon the Vulnerability Assessment, this stage of the work will identify the highest priority adaptation needs, develop potential strategies to

address those needs and evaluate those strategies in terms of the timing of when impacts will occur, their cost-effectiveness, multiple benefits and other feasibility considerations associated with each strategy. These may include those based in natural processes such as dune or wetland restoration, sea grass and kelp beds, oyster reefs and racks and other living shoreline approaches. Our project partner *Natural Capital* brings special expertise and experience to this effort. Alternatives will also include engineered solutions such as seawalls, rip-rap, and raising/floodproofing of structures, as well as planning, zoning, and legal adaptation alternatives. Part of the CCC grant would support legal work to make alternatives such as retreat/relocation, rolling easements, and the flexibility to relinquish public facilities or limit reconstruction over the next 25-30 years in the face of encroaching seas more operational in Marin County.

4. **Transfer lessons.** We propose a network be created among all recipients of this and related funding opportunities to share experiences and lessons as they are learned both during the grant period and at the conclusion of these projects. This network could be coordinated by the CCC, OPC and/or through our project's OCOF team members who already act as conveners and communication strategists for multiple local, regional, and state adaptation efforts.

i. Public Benefit/Significance

The statewide (indeed national and international) significance of this area was established long ago. It encompasses the Point Reyes National Seashore, the Golden Gate National Recreation Area, two National Marine Sanctuaries, a RAMSTAR designation, a huge presence of State and local parks, and other recreational and agricultural areas of renowned physical beauty.

Marin is a microcosm of critical issues present all along the coast- open beaches and bluffs exposed to more severe wind and weather erosion in addition to sea-level rise, the drowning of wetlands and lagoons (like Bolinas), the potential loss of recreational resources, public access, low cost coastal visitor accommodations and commercial seafood operations, and the endangerment of homes, businesses, infrastructure and agricultural land.

At the same time, Marin is at a smaller, more tractable scale. Progress can be made here, and shared to maximize benefits to the coast and the public throughout the state and beyond. Specific benefits include strategies to:

- Increase the resilience of wetlands to rising sea level and promote their migration landward to avoid loss.
- Continue to provide recreational and visitor-serving resources with an evolving shoreline.
- Minimize or avoid damage, or relocate sensitive and priority land uses and critical infrastructure facilities, and reduce disruption to existing homes and businesses and their exposure to hazards.
- Facilitate redesign of recreational facilities for easy mobility to move inland or to alternative sites.
- Assess innovative "green" natural system approaches to sea level rise and extreme events.
- Validate and improve on models and techniques to analyze potential impacts.
- Develop public understanding of the importance of potential climate driven changes.

- Engage technical experts in deeper perception of the nature and consequences of SLR to increase their capability to implement response.
- Strengthen strategic approaches for assessing and responding to SLR issues.
- Widely share lessons learned to equip others to more rapidly advance their response.

ii. Relative Need for LCP Update/Extent of Update

Marin's certified LCP is still largely in its original 1982 form. However, over the past four years the County has invested more than $1 million in a major ongoing amendment process. The proposed changes would make the LCP clearer, easier to use and more integrated with other County plans and regulations. It would also revise specific policies to better respond to current conditions. Proposed amendments to hazard and development policies, including C-EH-22 (Ex.2, pg.2), call for developing a science-based assessment of how best to incorporate specific responses to sea-level rise in following LCP amendments. This work will extend all along the County's varied shoreline, and the upland areas that affect it. The County wishes to work closely with the Coastal Commission to assure that the LCP amendments fully carry out the Coastal Act, are highly effective, and are transferrable to provide the greatest assistance to other coastal jurisdictions.

The project will effectively protect and conserve coastal resources in critical ways. Sea level rise is expected to lead to increased erosion, loss of coastal wetlands, permanent or periodic inundation of low-lying areas, increase in coastal flooding, and salt water intrusion into stormwater systems and aquifers. Structures located along bluffs susceptible to erosion and in areas that already flood during high tides will likely experience an increase in these hazards from accelerated sea level rise. Sea level rise also threatens the integrity of roads and other infrastructure.

For example our preliminary analysis using the OCOF-generated SLR scenario (150 cm of sea level rise and 20-year frequency storm) and the County's GIS National Wetland Inventory (NWI) layer, calculated that more than 700 acres of Marin's fresh emergent coastal wetlands, and over 5,700 acres of estuarine and marine wetlands would be impacted (see Exhibit 1A). These include numerous smaller marshes at the mouths of drainages such as the Esteros Americano and de San Antonio that wind far inland, as well as the major features of southern Tomales Bay, Drakes Estero and Bolinas Lagoon. This project will identify ways to increase their resilience in place or allow them to migrate into upland areas.

Accelerated bluff erosion and failure will increasingly endanger built-up areas such as those adjacent to the Bolinas Cliffs, locations in Tomales Bay and on the open coast. The project will specifically map such susceptible areas and develop response strategies.

A treasure of federal, state and county beaches, parks and associated parking areas and facilities could be lost to erosion or inundation. The highly-used National Park Service's (NPS) beach at Stinson is just one notable example. Our preliminary analysis, (Exhibit 1B) shows that almost all of the sandy beach and most of the public parking lots could be inundated by the end of the century. The project will examine options for these resources, including dune rebuilding and restoration.

Roads, critical infrastructure, and public facilities are also at substantial risk. Our preliminary end-of-century estimates show Highway One would be inundated at many different locations, with a total of approximately 5.7 miles affected. This would cut off large areas of the coast, have a devastating effects on residents and visitors seeking escape from inland heat at coastal beaches, and restrict access to the world-class recreational and spirit-renewing resources of the Pt. Reyes National Seashore, the Golden Gate National Recreation Area (GGNRA) the Gulf of the Farallones National Marine Sanctuary (GFNMS) and the scenic working landscapes of west Marin. Our project will involve CalTrans and the County Department of Public Works (DPW) as partners in addressing this threat.

Homes, businesses, public facilities and infrastructure are similarly at risk. Moreover, combined coastal and riverine flooding, a threat has not been widely recognized to date, will increase, extending the hazard zone further inland. Exhibit 1C illustrates preliminary scenarios of this effect. Together with the County Flood Protection and Watershed Program, a project partner, we combine hydraulic modeling of creek flooding with the results of sea level modeling to gain a more complete synoptic view of future vulnerability, and develop integrated strategies.

A major strength of this project is its broad interagency and collaborative structure. For example, the project will utilize and build upon on the advanced work already accomplished by project partner *Our Coast–Our Future (OCOF)* as well as cross-check assessments with NOAA's Sea-Level Rise Viewer and FEMA's California Coastal Analysis and Mapping Project (CCAMP). We will take advantage of, and extend, the work of our stakeholder and technical expert partners such as the National Park Service and Gulf of the Farallones NMS, as well as the innovative Natural Capital Project to move our collective capabilities for responding to sea-level rise to a new level.

iii. Addressing the Effects of Climate Change

As described above, and elaborated in the attached detailed work program, the principal purpose of this project is to address and prepare to respond to the sea-level rise and associated aspects of climate change, including coastal and blufftop erosion, habitat impacts and recreational resources, and to develop strategies for adapting the natural and built environment to higher seas and increased extreme events. Concurrent with this specific focus, the County is also updating its Climate Action Plan (CAP) to address related issues, including water availability, fire hazards, and implications for agriculture, transportation and land use relative to reducing greenhouse gas emissions and vehicle miles travelled.

iv. Likelihood of Success/Effectiveness

From the very start of preparing the extensive LCP Amendment (LCPA) currently pending before the Commission, Marin County has sought to establish a new paradigm of working hand in hand with Commission staff. While the Commission's resources have not always been sufficient to support that collaboration at the level we all would have liked, we continue to be committed to that approach, and will apply it in this project, as it has clearly increased the effectiveness of the LCPA process. In addition to proposing that Commission staff participate as part of our TAC, we have built in to our project time to directly brief CCC staff at critical junctures to maintain successful cooperation. Another key to our past success has been our

ability to carry out an extremely open, accessible, and outreach-oriented process in developing the pending LCPA. We have the distinct advantage of being able to use the "infrastructure" of planning and the vital working relationships with the public, stakeholders and agencies we have built up on the coast over these many years. We will be able to use those relationships to effectively and efficiently carry out this project. The letters of support included in Exhibit 4 are just an early indication of how ready Marinites are to tackle the problem of sea-level rise.

The outstanding consortium of partners we have assembled, including innovation leaders like the Our Coast – Our Future team (the USGS, Gulf of the Farallones NMS, and Point Blue [formerly PRBO]), the Center for Ocean Solutions and the Natural Capital Project, and others, puts this project at the leading edge of science and application,. It promises not only our own success, but results that will be of great value to others along the state's coast.

As mentioned above, this project specifically carries out work proposed in the County's pending LCP Amendments' hazard and development policies, and particularly policy *C-EH-22 Sea Level Rise and Marin's Coast.* By engaging both the Planning Commission and the Board of Supervisors at key points in the process, the project will prepare them to act with knowledge and confidence on LCP Amendments proposed to address sea-level rise.

v. Workload and Permit Streamlining

Marin's pending LCPA already proposes significant changes that will foster a more efficient, streamlined and effective permit and post-certification process. Sea-level rise and climate change, however, create a whole new dimension of challenges to the coastal management and permitting process. That is precisely why our project is so essential and valuable. It will allow the County and the Commission to get ahead of the problems that are on their way, so that we and all those who will be affected can be informed, deliberate, coordinated and prepared rather than reacting in a rushed, ad-hoc and unplanned manner to crisis situations.

vi. Project Integration/Leverage/Matching Funds

This project partners with the organizations doing the most ground-breaking, advanced work on sea level rise and climate change in Marin, the Bay Area, and beyond. For example, the USGS CoSMoS model we will be using is currently being adapted for other regions within California. Marin County can serve as a blue print for how the models can be used to develop effective adaptation plans in other areas throughout the state.

Transferring the experience and lessons learned to others is a major project objective. One of our first order priorities is to promote the collaboration of all the agencies receiving OPC and CCC SLR grants to share information, resources and insights. We hope the CCC and OPC will join in support of this effort. Specific approaches we propose to achieve this goal include maintaining a web presence of our progress for other local agencies, expanding the Our Coast–Our Future Community Forum tool to provide useful case studies for local agencies and others confronting sea level rise; providing presentations directly to agencies through such channels as the Coastal Commission, Coastal Conservancy, multi-governmental bodies (Local Government Commission, Association of Bay Area Governments, California State Association of Counties, League of Cities), professional organizations, conferences and meetings targeted at sea level rise; direct

consultation and assistance to individual local governments; and webinars targeting local agencies.

This approach would put work products particularly designed for updating LCPs directly into the hands of other coastal jurisdictions in a form that is of greatest assistance to those agencies in achieving our shared goals for coastal management in the face of sea-level rise and climate change.

1. **A WORK PROGRAM AND SCHEDULE.** Provide a work program and schedule for implementation of the project, including anticipated benchmarks for LCP and or LCP amendment development and review for the project, using the template provided below. Bear in mind that funds will not be available until early spring 2014 and some work tasks must be scheduled to begin on or before April 30, 2014. Grantees will have two years to complete tasks, and work must be completed on or before April 30, 2016.

SCHEDULE

Proposed starting date: 1/1/14
Estimated completion: 4/30/16

WORK PROGRAM

(Please see full Work Program, Ex. 2, sec. C)	Complete Date:
Task C.I. Establish Public Involvement Process, Technical and Stakeholder Committees	3/31/14 (and continuous)
Task C.2. Vulnerability Assessment	4/30/15
2.1 Exposure Assessment	5/30/14
2.2 Sensitivity Assessment	1/30/15
2.3 Potential Impact Assessment	1/30/15
2.4 Adaptive Capacity Assessment	1/30/15
2.5 Risk and Onset	4/30/15
Deliverable: Vulnerability Assessment Report	Projected date 4/30/15
Task C.3 Adaptation Strategy Development	4/30/16
3.1 Prioritize Adaptive Needs	8/30/15
3.2 Evaluate and Prioritize	12/31/15
3.3 Develop Implementation Plan,	2/29/16
Deliverable: Adaptation Strategy Report	Projected date: 2/29/16
Task C.4 Transfer Lessons	4/30/16
Deliverable: Final Report	4/30/16

Please list (1) all significant and pertinent project benchmarks related to the project for which funds are being requested, (2) expected dates for reaching or completing those steps. These will be used in monitoring grant progress and in grant reporting under approved contracts.

BENCHMARK SCHEDULE

ACTIVITY	COMPLETION DATE
Establish SAC and TAC	3/31/14
First General Public Meeting (Project Process)	5/30/14
Progress Report to SAC, TAC, PC, BOS	9/30/14
Second Public Meeting-Progress Update	10/24/14
SAC, TAC Review- Vulnerability Report	2/27/15
Third Public Meeting/ Plan. Comm./ Bd.Sups.	4/30/15
SAC, TAC Prioritize Adaptation Strategies	11/13/15
Fourth Public Meeting - Proposed LCPAs	2/29/16
Planning Commission Action –Proposed LCPAs	2/29/16
Board Action – Proposed LCP Amendments	4/30/16

2. **A BUDGET.** Please provide a proposed budget, including the Application Budget Information and a Budget Summary, using the provided Application Budget Form.

APPLICATION BUDGET INFORMATION

Funding Request: $64,000 **Total Project Cost: $433,000**

If multiple funding sources are being used, in the funding sources matrix below, list the major tasks of the proposed project and indicate the estimated cost of each, including source of funding for task. These tasks should correlate with your overall Work Program. An example follows the matrix.

PROJECT FUNDING SOURCES

Task #	Task	Total Cost	Allocation of total cost among all funding sources			
			Applicant's funding	LCP Grant Funding	Other Funds (OPC[1])	Other funds (C-SMART Partners[2])
C.1	Advisory Committees	$49,000	$19,000	$25,000	$7,000	
c.2.1	Exposure Assessment	$40,000	$10,000		$24,000	$6,000
c.2.2	Sensitivity Assessment	$34,000	$10,000		$15,000	$9,000
c.2.3	Potential Impacts	$42,000	$6,000		$15,000	$21,000
c.2.4	Adaptive Capacity	$34,000	$10,000		$24,000	
c.2.5	Risk and Onset	$18,000	$2,000		$16,000	
c.3.1	Prioritize Adaptive Needs:	$47,000	$13,000	$5,000	$29,000	
c.3.2	Identify Strategies	$75,000	$8,000	$16,000	$39,000	$12,000

c.3.3	Evaluate and Prioritize	$45,000	$14,000	$6,000	$25,000	
c.3.4	Phase, Implement ,	$26,000	$16,000	$8,000	$2,000	
C.4	Transfer Lessons	$21,000	$13,000	$4,000	$4,000	
TOTAL		$433,000	$121,000	$64,000	$200,000	$48,000

[1]Grant from the Ocean Protection Council
[2]Match from Our Coast-Our Future, Natural Capital.

OTHER FUNDING SOURCES (NOT INCLUDING IN-KIND SERVICES)

$ Amount	**Source of funds**	**Status (Committed, Applied, etc)**
28,000	Our Coast-Our Future	Committed
20,000	Natural Capital/Center for Ocean Solutions	Committed

In-kind Services: $2,641,000

In-kind services or contributions include staff time, volunteer time and materials contributed to the project. Please describe and estimate value, and differentiate between expected in-kind contributions and contributions (work or other types of contributions) already obtained/completed.

$ Amount	***Source of funds***	***Status (Committed, Applied, etc)***
1,206,000	OCOF- Models, assessment and presentation.	Completed
1,000,000+	County of Marin – LCPA effort already accomplished and submitted.	Completed
260,000	TAC Members, meetings and review	Expected
175,000	SAC Members, meetings and review	Partially committed
$2,641,000	**Total**	

BUDGET SUMMARY

Grant Application Budget Form

Organization Name: **County of Marin**
Project Title: **C-SMART** - Collaborating on Sea-level Marin: Adaptation Response Team
Requested Amount: **$64,000**

	Grant Request Budget	**Total Project Budget (if different)**
Personnel:		
Salaries and Wages [(1)]	$46,000	$306.000
Benefits [(2)]	$18,000	$122,000
Total Personnel	*$64,000*	*$428,000*
Postage/Shipping	0	0
Supplies/Materials [(3)]	0	$2,000
Travel [(4)]	0	$3,000
Indirect Costs [(5)]	0	($43,000)
Other:		
_____	_____	_____
_____	_____	_____
Total Operating Expenses	*$64,000*	*$433,000*
Total Budget	***$64,000***	***$476,000***

Explanation of rates (salaries and wages, excluding 40% benefits)

(1)	County Counsel	$77/hr	230 hours
(2)	Planning Manager	$58/hr	150 hours
(3)	Planner	$42/hr	200 hours
(4)	Facilitator	$72/hr	150 hours

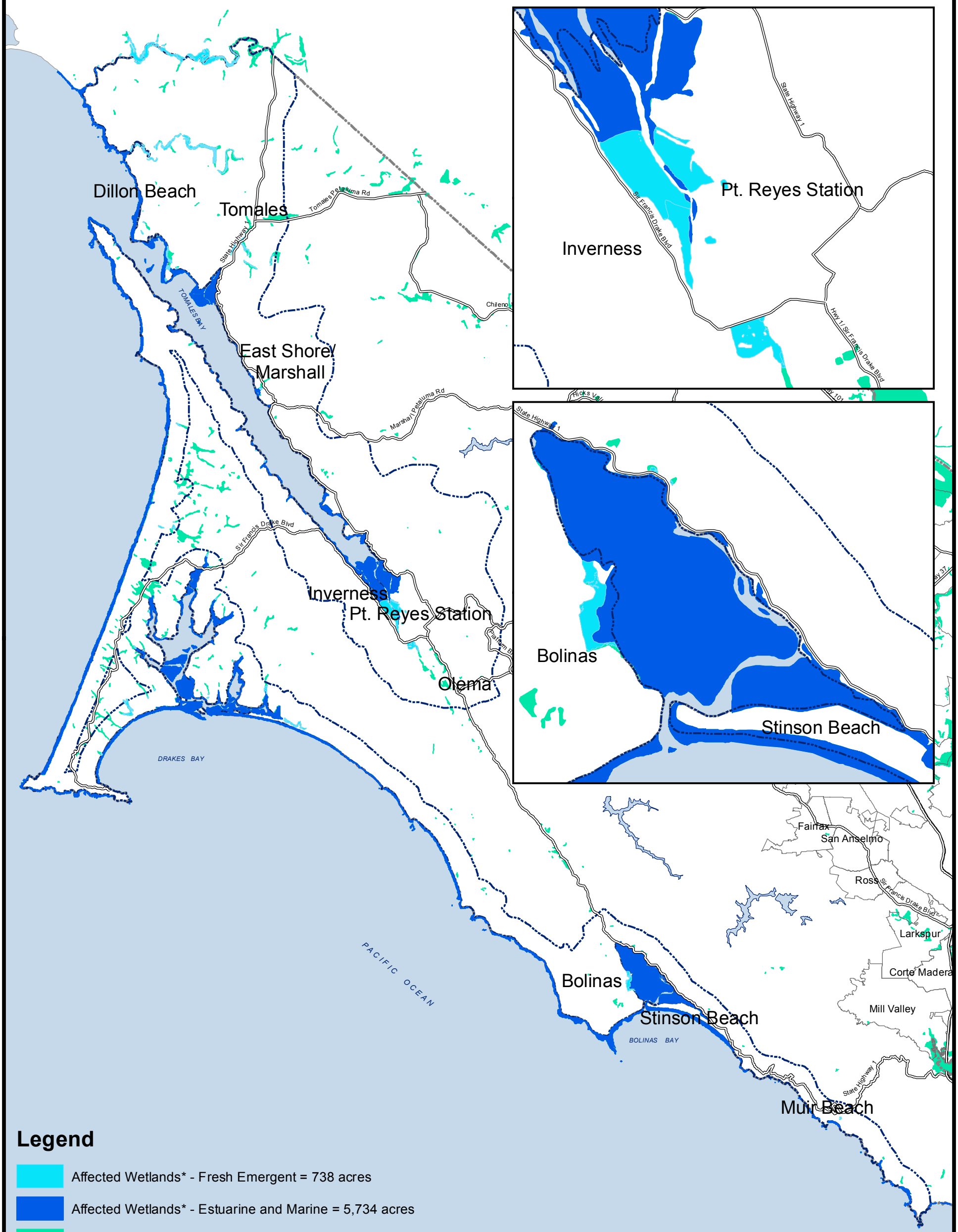
[(1)] Attach an explanation of rate(s) and hours for each position for which funds are being requested.
[(2)] Amount requested for benefits not to exceed 40% of amount requested for salary or wage.
[(3)] Include a list of the major supplies and materials and how much they cost.
[(4)] Travel reimbursement rates are the same as similarly situated state employees.
[(5)] Indirect costs include, for example, a pro rata share of rent, utilities, and salaries for certain positions indirectly supporting the proposed project but not directly staffing it. Amount requested for indirect costs should be capped at 10% of amount requested for "Total Personnel."

ATTACHMENT B - APPLICATION CHECKLIST

A complete Grant Application Packet includes the following components. Please submit all documents in a single PDF file and the Project Description, Work Program, Budget, and Schedule as a Word document, as noted below. **It is very important to receive the PDF file and a Word document for efficiency in preparing contract documents.** Thank you for your attention to these important components of the application.

- x Signed LCP Grant Application Form (.pdf)
- x Project Description (.doc)
- x Work Program, Budget, and Schedule (.doc)
- ☐ Signed Resolution (.pdf) Due to late revisions associated with the OPC action, this will be provided by Dec. 19, 2013
- x All documents combined into a single PDF file (.pdf)

Potential Impacts of Sea Level Rise to Estuarine, Marine and Fresh Emergent Wetlands
Coastal Zone, Marin County, CA



Legend

- Affected Wetlands* - Fresh Emergent = 738 acres
- Affected Wetlands* - Estuarine and Marine = 5,734 acres
- Other Estuarine, Marine and Fresh Emergent Wetlands
- Coastal Zone Boundary

* Calculation for "affected wetlands" based on projected flooding extent resulting from a Sea Level Rise of 150cm with a 20 year storm scenario frequency, as modeled by Our Coast Our Future (OCOF).

SOURCES: Marin County Community Development Agency; National Wetlands Inventory (NWI); Our Coast Our Future (OCOF)

0 1 2 4 6 8 Miles

N

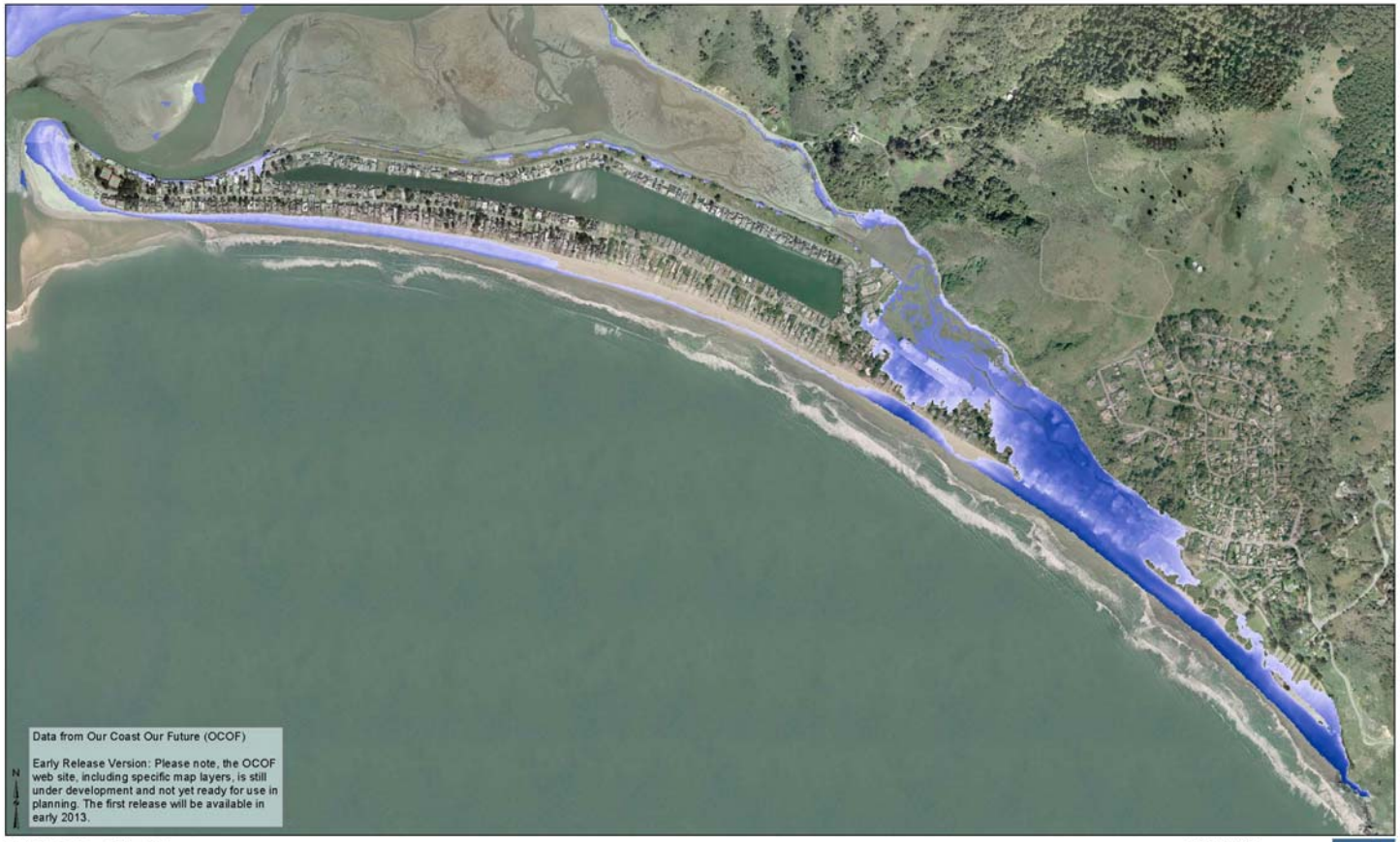
Date: July 12, 2013 File: OCOF_Wetlands and SLR_7.12.2013.mxd


Upton Beach
Stinson Beach
Community
Public Parking Lots
Legend
Projected flood inundation area*
* Based on projected flooding extent resulting from a Sea Level Rise of 150cm with a 20 year storm scenario frequency, as modeled by Point Blue Conservation Science.
SOURCES: Marin County Community Development Agency; Our Coast Our Future (OCOF).
Feet
0 125 250 500 750 1,000
THIS MAP WAS DEVELOPED FOR PLANNING PURPOSES.
THE COUNTY OF MARIN IS NOT RESPONSIBLE OR LIABLE
FOR USE OF THIS MAP BEYOND ITS INTENDED PURPOSE.
THIS MAP IS REPRESENTATIONAL ONLY.
DATA ARE NOT SURVEY ACCURATE.
Date: July 9, 2013 File: OCOF_Wetlands and SLR_7.9.2013_Stinson Beach Park.mxd
N
Potential Impacts of Sea Level Rise to Stinson Beach
Coastal Zone, Marin County, CA

Exhibit 1C

Easkoot Creek, Ocean Flooding: 1 Year Storm, 50 cm. sea level rise

Easkoot Creek, Ocean Flooding: 100 Year Storm, 50 cm. sea level rise



STINSON BEACH

Flooding from Storm Surge and Sea Level Rise: 100-yr storm and 50 cm sea level rise

Marin County
Flood Control and
Water Conservation District
January 2013

EXHIBIT 2

C-SMART
Collaborating on Sea-level Marin: Adaptation Response Team
DETAILED WORK PROGRAM

Introduction and Background

Marin County's coast is a perfect testing laboratory for grappling with sea-level rise and related climate change issues. Its diverse biological resources, varied topography and highly susceptible human habitation and infrastructure present a full range of the challenges that will need to be faced all along the California coast.

Maps and Photos

Exhibit 1A shows a map of the project area, which illustrates one scenario of potential wetland inundation that is discussed below.

Potential Impacts from Sea-Level Rise – Preliminary Assessment

The purpose of this project is to understand the vulnerabilities to sea level rise along Marin County's coast, define adaptation strategies that will increase the resiliency of the coastal resources of Marin, and share lessons learned with others.

The project will utilize and build upon on the advanced work already accomplished by *Our Coast–Our Future (OCOF),* a partner in this project, as well as assessments with the National Oceanic and Atmospheric Administration's (NOAA) Sea-Level Rise Viewer, and the Federal Emergency Management Agency's (FEMA)California Coastal Analysis and Mapping Project (CCAMP). These three projects, together, provide an enhanced understanding of the potential increased exposure due to sea level rise and coastal storm surge and wave impacts -- all of which are essential for planning responsive adaptation strategies along the open California coastline. Even preliminary work with them shows the potential impacts on resources are all too evident. For example:

- Marin's highly valuable coastal lagoons and wetlands that are so vital to the ecosystem that they have been designated under the international RAMSAR Convention. However, they are at the risk of drowning over time unless action is taken to increase their resilience in place in place or allow them to migrate into upland areas. Using the OCOF-generated scenario of 150 cm of sea level rise and 20-year frequency storm and the County's GIS National Wetland Inventory (NWI) layer, our very preliminary analysis calculated that more than 700 acres of Marin's fresh emergent coastal wetlands, and in excess of 5,700 acres of estuarine and marine wetlands would be impacted (see Exhibit 1A). These include numerous smaller marshes at the mouths of the area's drainages, the Esteros Americano and de San Antonio that wind far inland, and the major features of southern Tomales Bay, Drakes Estero and Bolinas Lagoon.

- Accelerated bluff erosion and failure will increasingly endanger built-up areas adjacent to the Bolinas Cliffs, as well as other locations in Tomales Bay and the open coast.

- A wealth of federal, state and county beaches, parks and associated parking areas and facilities could be lost. The highly-used National Park Service's (NPS) beach at Stinson is just one notable example. Under the same 150 cm scenario, Exhibit 1B shows that almost all of the sandy beach and most of the public parking lots would be inundated.

- Roads, critical infrastructure , and public facilities are also at risk from rising waters. Under this scenario, our preliminary estimates are Highway One would be inundated at many different locations, with a total of approximately 5.7 miles affected, cutting off large areas of the coast, This would have a devastating effects on residents and visitors seeking escape from inland heat at beaches and trails that survive sea-level rise, and restricting access to the world-class recreational and spirit-renewing resources of the Pt. Reyes National Seashore, the Golden Gate National Recreation Area (GGNRA) the Gulf of the Farallones National Marine Sanctuary (GFNMS) and the scenic working landscapes of west Marin.

- Homes are similarly threatened. The Seadrift subdivision in the northern part of Stinson Beach is built on what was once a migrating sandspit, and would potentially be at great risk of inundation. Other portions of Stinson Beach are similarly susceptible.

- Combined coastal and riverine flooding will increase, extending the hazard zone further inland. This threat has not been widely recognized to date, but the C-SMART project offers a unique opportunity to leverage past and ongoing work to assess such risks. Stinson Beach already suffers flooding from Easkoot Creek which drains the steep watershed behind it, then flows into Bolinas Lagoon. As tidal water levels increase in the Lagoon, the increased hydraulic head of the receiving water will aggravate flooding levels in the creek, catching Stinson's public facilities, roads and homes in a pincer grip of combined riverine and ocean flooding. The hydraulic modeling of creek flooding recently developed by the County Department of Public Works' (DPW) Flood Protection and Watershed Program, a project partner, will be combined with the results of sea level modeling to gain a more a complete synoptic view of future vulnerability. Exhibit 1C illustrates preliminary scenarios of this combined flooding effect.

Marin Coast Exceptionally Suited for This Project

Marin County is committed to protecting and restoring its resources, as evidenced by multi-agency public/private collaborations such as the Bolinas Lagoon Ecosystem Restoration Project(a historic partnership between GFNMS, the US Army Corps of Engineers, GGNRA, Point Reyes National Seashore, Marin County Parks, and the local Stinson Beach and Bolinas communities) and the NPS Giacomini Wetland Restoration Project in southern Tomales Bay. These are just two examples of the area's commitment to protecting and restoring these resources. Not only will this project provide information critical to the long term success of these and other efforts, but it will also draw upon and benefit from the experience gained through these efforts by including key participants in its Technical Advisory Committee.

Stinson Beach exemplifies a project focal area. There the project will leverage extensive assessment and hydraulic modeling already completed by the County, OCOF and FEMA to evaluate the costs and benefits of a range of management and engineering adaptation approaches useful for other California coastal communities threatened by sea level rise. The community's relatively small size and history of partnership with the County can allow innovative adaptation planning ideas to be developed on a shorter time scale and at more manageable costs, providing practical results to be expanded to other larger communities more quickly.

Marin's Local Coastal Program (LCP) Commitment to Responding to Sea Level Rise

Marin has long been in the forefront of accepting and dealing with challenges to its environment, people and future. Marin adopted one of the first Greenhouse Gas planning programs in the state, developed its the award-winning and pace-setting 2007 Countywide Plan to carry out the principles of sustainability, and leaped to the forefront with its groundbreaking and highly successful Marin Clean Energy Community Choice Aggregation (CCA) program. These and other actions demonstrate Marin's willingness and ability to adapt and change institutions and programs to meet the challenge of sea level rise and climate change.

The County's draft Local Coastal Program Amendment (LCPA) proposes strong policies and standards for avoiding hazards, assuring safety, preventing resource impacts in the design of new development, and evaluating opportunities to include natural habitats as 'green infrastructure' in protecting coastlines, (LCPA Policy C-EH-22). Successfully carrying out these policies, however, requires applying the best available scientific understanding, technology and governance. That is why the County early in the development of the LCPA put high priority on a specific policy and program to apply the most advanced science and the highest level of collaboration to addressing sea level rise, as described in Policy C-EH-22 and its associated Programs:

> **C-EH-22 Sea Level Rise and Marin's Coast.** Support scientific studies that increase and refine the body of knowledge regarding potential sea level rise in Marin, and possible responses to it.
>
> ***Program C-EH-22.a Research and Respond to the Impacts of Sea Level Rise on Marin County's Coastal Zone Shoreline.***

1. Continue to gather information on the effects of sea level rise on Marin County's Coastal Zone shoreline, including identifying the most vulnerable areas, structures, facilities, and resources; specifically areas with priority uses such as public access and recreation resources, including the California Coastal Trail, Highway 1, significant ESHA such as wetlands or wetland restoration areas, open space areas where future wetland migration would be possible, and existing and planned sites for critical infrastructure.

   Any vulnerability assessment shall use best available science and multiple scenarios including best available scientific estimates of expected sea level rise, such as by the Ocean Protection Council [e.g. 2011 OPC Guidance on Sea Level Rise], National Research Council, Intergovernmental Panel on Climate Change, and the West Coast Governors Association.

2. Based on information gathered over time, propose additional policies and other actions for inclusion in the LCP in order to address the impacts of sea level rise. As applicable, recommendations may include such actions as:

   a. relocation of existing or planned development to safer locations, working with entities that plan or operate infrastructure, such as Caltrans

   b changes to LCP land uses, and siting and design standards for new development, to avoid and minimize risks;

   c. changes to standards for wetland, ESHA, and stream buffers and setbacks;

   d. changes to standards for erosion rates;

   e. modifications to the LCP Access Component to ensure long term protection of the function and connectivity of existing public access and recreation resources; and

   f. modifications to the Regional Transportation Plan.

Program C-EH-22.b Study Bluff Retreat. The County shall seek funds for a study to identify threats of bluff retreat taking into account accelerated sea level rise.

An Unparalleled Team

Marin County has been exceptionally fortunate to be the subject of leading-edge research on climate-driven sea level rise extreme storm events. These scientists and practitioners have graciously agreed to come together to extend their work through the C-SMART project. Core members include those already working together through Our Coast–Our Future☹ U.S. Geological Survey (USGS), GFNMS, Point Blue and Coravai); leaders of FEMA's California Coastal Analysis and Mapping Project (CCAMP) "Open Pacific Coast Study," the Natural Capital Project and Center for Ocean Solutions; ESA-PWA experts Bob Battalio and Jeremy Lowe; and the County's own County Counsel, Emergency Services, Planning, and DPW Flood Protection and Watershed Program

By capitalizing on advanced research and modeling done in the area, utilizing Marin's rich and diverse environment as a premier laboratory, and bringing together an exceptional team of leading experts to collaborate on solutions, C-SMART is poised to take on the challenge of sea level rise. The following Project Description describes how we plan to do it.

Project Description

A. Goals and Objectives

The C-SMART Project's overall goal is to complete an assessment of the possible impacts, mitigations, costs, and adaptation strategies to reduce the vulnerability of people, natural coastal resources, and the built environment, and to increase local capacity to adapt to sea level rise.

As discussed in the Introduction, the draft LCPA would establish policies and standards to assure safety and avoid hazards in new development, protect resources and encourage innovative adaptation to changing conditions. The ability to apply and implement these policies fundamentally depends on improved understanding of sea level rise and its consequences as described in LCPA Policy C-EH-22 and its related Programs and as set out in the work proposed below.

B. Need

Coastal and shoreline communities in Marin, and all along the west coast, will face increasingly difficult challenges with regard to sea level rise and climate disruption. The County's draft Land Use Plan Amendment (LUPA) puts sharp focus on the need to act on sea level rise:

> Sea level rise is expected to lead to increased erosion, loss of coastal wetlands, permanent or periodic inundation of low-lying areas, increase in coastal flooding, and salt water intrusion into stormwater systems and aquifers. Structures located along bluffs susceptible to erosion and in areas that already flood during high tides will likely experience an increase in these hazards from accelerated sea level rise. Sea level rise also threatens the integrity of roads and other infrastructure. [LUPA p 41]

As discussed above, changing sea levels, storm frequency and intensity, beach and cliff erosion and flooding will impact habitat resources, critical infrastructure, communities, families and individual people. This project will be key in building an effective response, through a partnership of local, state, and federal government, educational and research groups, the private sector and the public as a whole.

Marin County is fortunate that significant analysis has already been undertaken along the Marin coastline by multiple federal, state and local agencies and stakeholders. For example, the Our Coast - Our Future Project centered in the S.F. Bay Area coast provides new, detailed data for assessing sea level rise, storm surge and waves along the open Marin coastline. FEMA's CCAMP project can also provide a wealth of data associated with existing coastal hazards, including 100-year coastal storm surge and wave hazards. These two data sets, along with NOAA's Sea Level Rise Viewer, can complement each other to provide a more comprehensive understanding of existing and future coastal dynamics. For many coastal vulnerability and risk assessments, lack of available data can hinder robust planning and decision making - For Marin County, the availability of this data put us many steps ahead.

The major need is twofold: not only to assess potential physical impacts in order to develop effective strategies to adapt to sea level rise, but also to develop a framework to channel this knowledge into the decision-making process so these strategies can be implemented. In Marin, County government is a pivotal player in this role in partnership with other levels of government, the public and the private sector.

C. Approach

In order to maximize the transferability of our work, we have chosen to use the framework of the *California Adaptation Planning Guide.* The *Guide* is specifically intended to be used by local governments and regional collaboratives in their sea level rise adaptation efforts. Using this template will make it easier for others to access and build upon our work in their own geographic areas. The individual steps prescribed in the *Guide* are detailed in section c.2 below.

Beyond the technical approach, however, our experience teaches us that the development and implementation of sea-level rise adaptation hinges upon community understanding, involvement, and support. We have therefore made stakeholder engagement fundamental to our approach:

C.1 Establish Public Involvement Process, Stakeholder and Technical Advisory Committees

The C-SMART adaptation outreach and education program has three related parts:

1) ***Stakeholder Advisory Committee (SAC),*** made up of both those who could be directly impacted by sea level rise and those with a broader interest in coastal resources and public finances, including citizen groups such as the Environmental Action Council of West Marin, planning groups such as the East Shore Planning Group, and affected individuals.
2) ***Technical Advisory Committee (TAC),*** to provide a foundation for the best available science with respect to sea-level rise impacts.
3) ***Comprehensive Public Involvement,*** to engage the entire community.

The SAC and TAC will provide informed, in-depth and continuous advice throughout the project, and participate in broadening the outreach effort. Outreach to the wider community will complement the SAC, providing a series of public meetings and a web site to act as a public involvement tool and a repository for project-related information, much like the highly successful sites the County has used in its LCP Amendment process. (www.MarinLCP.org; www.MarinCounty.org/OpenMarin).

The TAC will contribute state-of–the-science data, analysis and contacts, guide development of critical new data, and provide expertise and ideas to make the project as productive and useful as possible. It will continue and expand the County's relationships with the leading researchers, innovators ,practitioners and consultants formed through Our Coast-Our Future, FEMA's CCAMP, Successful Adaptation in Coastal Environments (S. Moser), Future of Wild Marin (UCSC), and Southern Marin Sea Level Rise Pilot Study (County Supervisor Sears and BCDC ART) projects and numerous other symposia and trainings.

The two committees will work together through a scenario planning workshop to begin the process of developing robust adaptation strategies for uncertain future sea level rise and storm conditions. The workshops will allow participants to explore a range of potential future conditions and to develop creative approaches for dealing with impacts. The TAC will provide a foundation for the best available science with respect to sea-level rise impacts while the SAC will represent the needs and concerns of stakeholders throughout the area. The workshop will provide a forum for the two groups to interact to develop a shared understanding of the risks and consequences of proposed adaptation strategies.

C.2 Vulnerability Assessment

Context: The vulnerability assessment in the Cal-Adapt method involves steps described below.

Marin County is especially fortunate to have been working with the cutting-edge multi-agency Our Coast–Our Future Project for nearly two years. The project has developed new, high resolution sophisticated scientific tools that the project will put to work in Marin County, while providing critical real-world tests that will guide further development of the prototypes for use elsewhere in California and the nation. The OCOF tools provide the capability to model the full range of vulnerabilities from sea level rise and storm hazards, including factors such as water levels, wave heights, flooding, and erosion, which are not available in most other datasets. Specific OCOF assets that will be used include a seamless Digital Elevation Model derived from recent LIDAR and multibeam bathymetry, a suite of 40 dynamic coastal flooding projections in 25cm increments with four storm scenarios ranging from daily to 100-year return levels, interactive maps overlays and a user-friendly interface to promote public understanding.

FEMA's CCAMP "Open Pacific Coast Study" is conducting critical analyses including statistical water level analysis, offshore and nearshore wave modeling, wave runup and overtopping assessments, and coastal erosion studies that can be integrated with the OCOF data to strengthen the robustness of the project's assessments. Marin County is the first of the fifteen coastal counties being studied by FEMA for their comprehensive update of coastal flood hazard and mapping data, and this data will be available for Marin's use within C-SMART.

The project will also capitalize on investments by the Stinson Beach Flood Protection and Watershed Program that has conducted two-dimensional riverine flood modeling to assess and produce results on the impacts of sea level rise scenarios on riverine flooding. Stinson Beach lies at the outflow of the Easkoot Creek watershed, which drains into Bolinas Lagoon and has historically experienced severe flooding. C-SMART will work to integrate the vulnerabilities from sea level rise with the risks from the land/watershed

side to gain a holistic view of the total problem. This aspect of the project will also provide an important prototype to benefit the many other communities that face similar challenges.

Collaborating with the Natural Capital Project /Center for Ocean Solutions will allow application of the InVEST (Integrated Valuation of Ecosystem Services and Tradeoffs) toolbox, which can assess coastal vulnerabilities to sea level rise and storms, including spatial and economic evaluation of risks to people, property and infrastructure from erosion and inundation due to climate impacts. The InVEST models can use information from OCOF tools and estimate the added value and co-benefits of natural habitats such as dunes, wetlands, and marshes, in reducing vulnerabilities to sea-level rise and climate-induced storms (see www.naturalcapitalproject.org).

C.2.1 **Exposure Assessment** *(OCOF Lead, PWA support)*
The purpose of Task 2.1 is to determine what climate change effects the Marin coast will experience. Using OCOF outputs to integrate wind, wave and surge conditions into the exposure assessment .puts this project well ahead as a model for others. Moreover, as the Coastal Storm Modeling System (CoSMoS) models used in the OCOF tool are beginning to be applied in other areas throughout the state, use of the OCOF tool in this project will serve as a demonstration that other planning agencies throughout the state can use it for their own impact assessments.

In addition, the collaboration with FEMA will ensure that this project is consistent with their analyses of extreme events and the corresponding mapping data that will become the regulatory basis for Marin County through the National Flood Insurance Program.

The project will not only model mean sea level rise, but will also address other key factors:

Extreme events (OCOF): As noted by Heberger, *et al*. (2009), "the majority of studies on climate change have emphasized changes in average conditions, yet the greatest socio-economic impacts tend to occur as a result of extreme events…" (Exhibit 3) The NOAA Sea Level Rise Viewer does not include such events, but OCOF modeling does, providing an important new dimension and value to this project.

Combined flooding (County Flood, OCOF): Heberger also finds that "higher sea levels… can also worsen flooding in nearby rivers as higher water surface elevations at the downstream end of a river causes water to back up and increase upstream flooding." The County DPW Flood Protection and Watershed Program, a C-SMART partner, just completed extensive watershed analysis and hydraulic modeling of flood flows in Easkoot Creek which passes through Stinson Beach. The Creek drains directly into Bolinas Lagoon, and the preliminary modeling indicates sea level rise in the Lagoon will retard drainage and worsen flooding from the landward side at the same time that its increases from the ocean side. C-SMART will examine this important, potentially widespread, yet poorly studied vulnerability, currently not shown in the NOAA Coastal Viewer.

Geomorphic evolution (PWA): Patterns and rates of erosion and deposition on the coast will change as sea level rises, extreme events increase and runoff changes. Over a period of decades we expect to see significant changes in the morphology of the coast that in itself may threaten resources, such as the erosion of bluffs. It may also change the extent of hazard zones by allowing large areas to become inundated as they are eroded. Few assessments have considered the geomorphic response to sea level rise, but C-SMART will describe these qualitatively and their influence on inundation and flooding based upon previous work undertaken for the Pacific Institute (2009).

Deliverable: A report section of the changes projected in flooding during extreme events, combined flooding and geomorphic change due to climate impacts, focusing on the years 2030, 2050 and 2070(?) will be written. This will leverage existing studies to the extent feasible. The report section will be written by CDA with contributions from OCOF,PWA and County DPW. It will include GIS maps developed by CDA indicating the location and extent of the hazard areas.

C.2.2 **Sensitivity Assessment** *(CDA lead, PWA, OCF support)*
Task 2.2 will determine what resources of the coast (functions, structures, and populations) will be affected by the impacts. Using the tools available from OCOF and others, this part of the project will specifically map resources and assets, identify their level of criticality, and evaluate the degree that these and other assets are susceptible to damage from a range of sea level rise and storm surge scenarios in order to develop a sharper picture of the sensitive resources.

For example, Marin's coastal zone is exceptionally rich in resources, including public beaches, recreational and visitor-serving opportunities, wetlands, diverse wildlife and sensitive habitats, and productive agricultural lands. People and their support systems also crowd the shore – homes on sandspits and low-lying areas with nothing but shifting sands separating them from the sea. Other homes already sit on piles above the water itself. These dwellings rely on septic systems to cleanse their wastewater before it rejoins the ocean; but the effect of a rising ocean on the water table and the viability of those systems has not been measured. Saltwater intrusion into low lying areas also has the potential to foul vital public and private drinking water sources. On hot, sunny days (which are likely to increase) thousands people from throughout the Bay Area and beyond come here for respite and recreation, relying on the sole north-south artery of Highway One. However, our preliminary analysis shows the Highway is susceptible to inundation at several key points, potentially cutting people off from the coast.

Deliverable: A report section describing the assets within the hazard area identified in Task C.2.1. The report section will be written by CDA with contributions from OCOF and PWA. It will include GIS maps developed by CDA indicating the location and criticality of the assets.

C.2.3 **Potential Impacts:** *(PWA lead, OCOF support)*
Task 2.3 will investigate how sensitive the vulnerable resources identified in Task 2.2 are to the climate change drivers identified in Task 2.1. This part of the assessment will evaluate how changing conditions will impact the resources at risk in terms of specific characteristics of the resource, magnitude of the impact, its persistence or growth over time, and the degree it disrupts the normal functioning of the community or resources.

In this process we will also account for the inherent uncertainty of models and predictions of expected change, and seek to prepare robust scenarios to strengthen the willingness to make decisions despite a lack of all the desired information.

Deliverable: A report section describing the potential impacts to the assets within the hazard area identified in Task C.2.1. The report section will be written by CDA with contributions from PWA and OCOF. It will include an assessment of potential impacts for each asset, rated low, medium or high. It will include tables developed by CDA indicating the location and impact rating.

C.2.4 **Adaptive Capacity:** *(PWA lead, DPW)*
This task will evaluate and characterize the structures and mechanisms that are currently available to respond to the identified potential impacts identified in Task 2.3, such as flood risk management levees and structures, floodproofing and raising homes, evacuation plans, flood insurance etc. Marin's demonstrated record on environmental innovation and leadership, combined with the creativity, foresight and accomplishment of other C-SMART partners, lay a solid foundation for this task.

Deliverable: A report section describing the adaptive capacity of assets within the hazard area identified in Task C.2.1. The report section will be written by CDA with contributions from County DPW, PWA and OCOF. It will include an assessment of the current capacity to address each of the potential impacts for each asset, rated low, medium or high. It will include tables developed by CDA indicating the location and adaptive capacity rating.

C.2.5 **Risk and Onset:** *(PWA lead)*
This task assesses how likely and how quickly the impacts identified in Task C.2.3 will occur. This assessment, integrating the likelihood of each impact and the expected level of damage and the timing of their occurrence will allow us to formulate priorities among the impacts to be addressed. Secondary impacts will be similarly assessed.

Deliverable: A report section describing the certainty and timing of impacts to assets within the hazard area identified in Task C.2.1. The report section will be written by CDA with contributions from PWA. Each potential impact will be rated low, medium, or high based on certainty and rated near-term, mid-term, or long-term based on onset. It will include tables developed by CDA indicating the location and certainty and timing ratings. A report of the vulnerabilities assessment (Task C.2) will be prepared by CDA that summarizes the results of the work above for review by the SAC and TAC.

C.3 Adaptation Strategy Development

Task 3 translates the climate vulnerability and risk identified in Task 2 into implementable actions as described in the *California Adaptation Planning Guide* .

C.3.1 **Prioritize Adaptive Needs**: *(CDA lead)*
Based upon the potential impacts (Task 2.3), the existing adaptive capacity (Task 2.4) and the risk and onset profile (Task 2.5) identified by the Vulnerability Assessment, the County, with input from the SAC and TAC, will formulate priorities for development of adaptation strategies.. For example, higher priority will go to strategies addressing impacts with greater potential severity, longer ramp-up times or easy, generally accepted and inexpensive solutions. Impacts that are already well controlled or predicted to arise further in the future (offering more time to mobilize a response) would rank with relatively lower priority.

Deliverable: A report section listing the potential impacts divided into three categories: (1) need to develop adaptation strategies (2) evaluate further to assess impacts and needs, and (3) continue to monitor to assess impacts. The report section will be written by CDA with contributions from PWA. It will include tables developed by CDA indicating the prioritization ratings.

C.3.2 **Identify Strategies** *(CDA lead)*
Task C.3.1 will assess which impacts require actions to address them This task (C.3.2) will identify which strategies should be pursued to address the adaptation needs. The project will develop a range of flexible, cost-effective multi-objective strategies which include both structural and non-structural responses. These may include those that work with natural processes such as dune or wetland restoration, sea grass and kelp beds, oyster reefs and racks and other living shoreline approaches, engineered solutions such as seawalls, rip-rap, and raising/floodproofing of structures, and planning, zoning, and legal adaptation alternatives such as planned retreat/relocation, rolling easements, and an evaluation of the flexibility local governments have to maintain or relinquish public facilities over the next 25-30 years in the face of encroaching seas. A targeted effort will be made to build upon Cal-Adapt's *Identifying Adaptation Strategies* and identify suitable strategies on a statewide and even global scale to capitalize on lessons learned by others. This should increase confidence and reduce the time from idea to implementation. We would like to coordinate this work with other grantees for an efficient division of labor. Strategies will be evaluated to identify those providing the most robust response over a spectrum of possible future conditions. The results of this effort will also strengthen the transferability value of our project.

Deliverable: A report section describing in conceptual terms a set of strategies to address each adaptation need identified for strategy development. This would include indicative costs and identification of co-benefits. The report section will be written by CDA with contributions from Marin County Counsel , DPW, PWA. ,OCOF, and Natural Capital

C.3.3 **Evaluate and Prioritize:** *(CDA lead)*
This task seeks to identify which of the strategies in Task 3.2 should be implemented first. Strategies will be prioritized based upon number of criteria determined by the County, with input from the SAC and TAC. The criteria could include the projected onset of impacts, indicative costs (both initial and ongoing), calculated effectiveness, the timing and duration of the strategy, the full spectrum of benefits including corollary gains beyond those related to sea level, (including "co-benefits" to habitat, public access and permitting), and legal political and community acceptability. A general cost - benefit analysis will be performed on various alternative scenarios based on knowledge of adaptation cost planning using a published range of costs in order to provide a basis of evaluation of next steps.

Planners have always had to act in the face of uncertainty, although the level of uncertainty with climate change is greater than in the past. The project team is highly capable in developing climate-smart adaptation plans utilizing techniques such as adaptive management, robust decision-making, and scenario evaluation. For example, we can use the OCOF and InVEST models to identify under what conditions strategies may fail. Strategies can then be modified to reduce these weaknesses.

Deliverable: A report section will be written that will identify, for each strategy, implementation timing: (near-term, mid-term, and long-term); indicative cost (low, medium, and high both for capital and

maintenance); likely range of effectiveness, and barriers to implementation and uncertainty. The report section will be written by CDA with contributions from the SAC, TAC, PWA and OCOF.

C.3.4 **Phase and Implement** *(CDA lead)*

A preliminary implementation plan will be prepared to delineate the phasing of strategies and their component projects and recommend responsibilities for who will carry out each strategy. Potential funding mechanisms will be identified and strategies to secure appropriate funding suggested, according to the implementation schedule. A monitoring and evaluation table, including adaptive management where applicable will be outlined for each broad strategy to address the performance and effectiveness of the strategies. A monitoring protocol will also be needed to evaluate changes in the rate and extent of sea level rise and related climate factors, and their conformance or divergence from the predictions upon which the adaptation strategies are based. Finally, periodic reviews will be included to allow re-calibrating accepted strategies in the light of the evolving science of understanding and responding to sea level rise.

One of the principal means of implementing the project will be updating the Marin County Local Coastal Program to incorporate the applicable measures to address sea-level rise and other climate change impacts. A preliminary list of such measures is being proposed in the County's draft LCPA (Program C-EH-22a) detailed above in the Introduction. . The County will work in close partnership with the Coastal Commission to assure that the LCP amendments fully carry out the Coastal Act, are highly effective, and are in a transferrable format to provide the greatest assistance to other coastal jurisdictions.

Deliverable: A report section will be written that will identify a conceptual implementation plan and monitoring program for the identified strategies. The report section will be written by CDA with contributions from PWA.

A final report of the adaptation strategy development (Task C.3) will be prepared by CDA that summarizes the results of the work above for review by the SAC and TAC. This report will include a section describing lessons learned written for the dissemination of knowledge gained during this project.

C.4 **Transfer Lessons** *(OCOF, CDA)*

We propose to create a network amongst all recipients of this and related funding opportunities to share experiences and lessons as they are learned across sectors and geographies. This network will be coordinated by OCOF team members who already act as conveners and communication strategists for multiple local, regional, and state adaptation efforts.

Deliverable:, A summary document of lessons learned from each funding recipient will be prepared in order to inform future iterations of this funding opportunity and of other policy initiatives. CDA and OCOF team members will prepare this report in consultation with state agencies including the Coastal Commission and the Coastal Conservancy to ensure that information in the document is actionable and relevant to existing planning and policy processes, including LCP updates.

D. Benefit

This project will maximize public benefits of the Marin County coastline by better understanding the effects of sea level rise and storms This will be accomplished through the use of detailed, high resolution models (such as OCOF), additional technical studies on geomorphic evolution and combined flooding targeted sea level rise response strategies to this unique, multi-use coastline, providing a real-world pilot for optimizing the use of such models, extensive partner collaboration, and transferring experience and lessons learned to other areas.

Specific benefits include strategies to:

- Increase the resilience of wetlands to rising sea level and permit their migration landward to avoid loss.
- Continue to provide recreational and visitor-serving resources with an evolving shoreline.
- Minimize or avoid damage, or relocate sensitive and priority land uses and critical infrastructure facilities, and reduce disruption and exposure to hazards for development in general.
- Facilitate redesign of recreational facilities for easy mobility to move inland or to alternative sites.
- Assess innovative "green" natural systems approaches to respond to sea level rise and extreme events.
- Validate and improve on models and techniques to analyze potential impacts
- Develop Stakeholder and general public understanding and importance of potential climate driven changes.
- Engage technical experts in deeper perception of the nature and consequences of SLRto increase their capability to implement response.
- Strengthen the strategic approach for assessing and responding to climate change issues.
- Widely share lessons learned to equip others to more rapidly advance their response.

E. Transferability

Actively engaging the unique constellation of organizations doing ground-breaking, advanced work on sea level rise and climate change in Marin puts this project far ahead of most coastal areas, and promises results that will provide widely applicable models. In addition, CoSMoS models are being generated for other regions within California, and Marin County can serve as a blue print for how these models can be used to develop effective adaptation plans in other areas throughout the state.

Transferring the experience and lessons learned to others is a major project objective and specific provisions are incorporated to achieve this goal. This includes: coordinating an information-sharing network for recipients of this funding during the period of funding; maintaining and expanding the Our Coast, Our Future web presence to include case studies from funding recipients and other adaptation efforts; providing presentations directly to agencies through such channels as the Coastal Commission, Coastal Conservancy, multi-governmental bodies (Local Government Commission, Association of Bay Area Governments, California State Association of Counties (CSAC, League of Cities), and professional organizations, conferences and meetings targeted at sea level rise; and direct consultation and assistance to individual local governments; and webinars targeting local agencies.

The County, the OCOF team, the Center for Ocean Solutions, the Natural Capital Project and other project participants team will work closely with the Ocean Protection Council, Coastal Conservancy and Coastal Commission to see that work products particularly designed for updating LCPs are put in the hands of other coastal jurisdictions in a form that is transferrable and of greatest assistance to those agencies, and that support is provided to adapt them to local needs.

F. Implementation

The specific actions to update the Marin County LCP to respond to sea level rise are detailed in the Overall Project Description. The County has deployed an extensive and effective public participation process for the LCP Amendments currently in process, and will build upon and extend this investment to provide early and regular planning involvement throughout the project, and especially during Adaptation Strategy Development.

Exhibit 3

EXTREME EVENTS A CRITICAL FACTOR IN COASTAL CLIMATE CHANGE

Exposure to the potential impacts of climate change on the coast cannot be looked at solely in terms of the rise in the average mean sea level. This so-called "bathtub" approach is but one component of a more complex set of factors that, only when taken together, begin to approximate the potential extent of exposure. As noted by Heberger, *et al*. (2009):

> The majority of studies on climate change have emphasized changes in average conditions, yet the greatest socio-economic impacts tend to occur as a result of extreme events. Coastal flooding is often caused by storm surges, which are caused by high winds and pressure differentials associated with storms. Along the California coast, wave-induced storm surge can exceed 1.5 m (Cayan et al. 2006), flooding low-lying areas and eroding coastal bluffs. Increases in mean sea level are expected to increase the frequency and intensity of these extreme events[1]

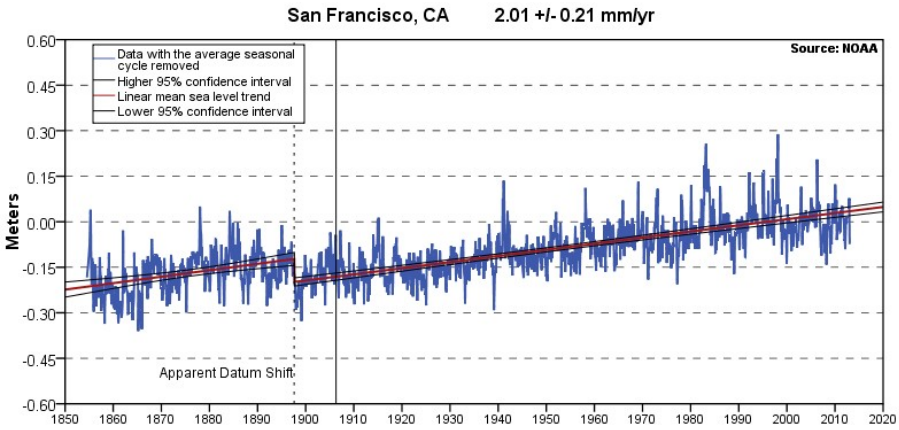
Comment [RDL1]: FEMA does 100-year conditions but doesn't take into account SLR

Comment [RDL2]: This seems low to me? I would think that would be much higher – is this for bayside surge and not open coast?

The sea level trend chart for the S. F. Bay Area shown below illustrates that individual extreme events far exceeded years of cumulative increases in average trend over the past century. While the NOAA Coastal Viewer does not include wave action in its depiction of flooding, OCOF modeling, on the other hand, does include vital new data on waves and wave runup.

[1.]The Impacts Of Sea-Level Rise On The California Coast, California Climate Change Center, Matthew Heberger, Heather Cooley, Pablo Herrera, Peter H. Gleick, Eli Moore , Pacific Institute, 2009 Pg. 8.

Comment [JPL3]: ROGER says: Good thought; trying to get a handle on the number of scenarios to be evaluated – can we limit to 2030, 2050 and 2100 with average and storm events (and use same riverine and coastal flooding event). The number quickly multiplies if we use too many. Need to define and limit somehow for this budget



The mean sea level trend is 2.01 millimeters/year with a 95% confidence interval of +/- 0.21 mm/yr based on monthly mean sea level data from 1897 to 2006 which is equivalent to a change of 0.66 feet in 100 years.

Source: National Oceanic and Atmospheric Administration (NOAA) Sea Levels Online, http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=9414290

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

Gulf of the Farallones National Marine Sanctuary
991 Marine Dr., The Presidio
San Francisco, CA 94129

Mary Small, Deputy Executive Officer
State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

July 12, 2013

Re: Marin Coast Local Coastal Program Sea Level Rise Adaptation Grant Proposal

Dear Ms. Small:

Gulf of the Farallones National Marine Sanctuary (GFNMS) strongly supports the project "Collaborating on Sea-level Marin: Adaptation Response Team (C-SMART)," submitted by the County of Marin and a specialized team of cooperating organizations, in response to the Ocean Protection Council, California Coastal Commission and the State Coastal Conservancy's Local Coastal Program Sea Level Rise Adaptation grant program announcement.

GFNMS protects the wildlife and habitats of one of the most diverse and highly productive marine environments in the world, sharing a coastal boundary with Marin County for a large portion of this protected area. Climate adaptation planning is a top priority for the sanctuary in order to continue to fulfill our mandate to maintain and where necessary, restore, the natural biological and ecological processes in the sanctuary, and we are currently developing a strategy for assessing vulnerabilities, identifying adaptation options, and developing an implementation plan. The proposed C-SMART project aligns well with our planning needs, and we are poised to directly contribute to this project through serving on the Technical Advisory Committee.

The Our Coast–Our Future project, which GFNMS provides project coordination for and partners with USGS, Point Blue Conservation Science, and Coravai LCC to provide science-based decision support tools to plan for sea level rise and flooding, has invested over one million dollars in sophisticated modeling and analysis that the Marin coast project will be able to directly capitalize on.

The diverse biological and recreational resources along the Marin County coast have made this area a national and international treasure. Together with vulnerable human infrastructure in difficult to defend locations, this area is particularly suited to be an important pilot for the rest of California's coast.

We support and look forward to participating in sea level rise adaptation planning for Marin County as an ultimate case study applicable to all of California's coast.

Sincerely,

Maria Brown

MARIA BROWN
Superintendent

United States Department of the Interior

NATIONAL PARK SERVICE
Golden Gate National Recreation Area
Fort Mason, San Francisco, California 94123

IN REPLY REFER TO:

N42 (GOGA-NRMR)

JUL 15 2013

State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

To Whom It May Concern:

Golden Gate National Recreation Area (GGNRA) is pleased to express its full support of Marin County's grant proposal: *Collaborating on Sea-level Marin: Adaptation Response Team (C-SMART)*, submitted for consideration under the Local Coastal Program Sea Level Rise Adaptation grant program.

Golden Gate National Recreation Area has a long history of collaboration with Marin County and other proposed project partners along the outer coast of Marin County from Bolinas Lagoon to the Golden Gate. The park has extensive visitor facilities within the communities of Stinson Beach and Muir Beach and has invested heavily, with significant financial assistance from State Coastal Conservancy, in wetland and creek restoration at the mouth of Redwood Creek in Muir Beach in a manner that incorporated sea level rise projections into the project design.

The park's Draft General Management Plan (the final to be released later in 2013) identifies the need to conduct additional vulnerability assessments and develop an adaptive management strategy and implementation plan to address climate change impacts on GGNRA's natural and cultural resources, visitor experience, and park facilities. Many of these issues must be addressed at the community and landscape level, and not in isolation from surrounding communities and other public lands. The C-SMART proposal responds to the critical need for such a collaborative approach. The park would expect to be a key partner throughout the life of the project.

On a parallel track, GGNRA is seeking grant funding for a smaller project in conjunction with the U.S. Geological Survey to develop shoreline change projections for the park's beaches, including Stinson, Muir and Rodeo beaches in Marin. This complementary study would determine the plausible range of future positions of the shoreline at these beaches building off of the Our Coast Our Future work and other recently developed coastal change models.

Thank you for your consideration of Marin County's C-SMART proposal. We look forward to participating in a highly collaborative approach to addressing the future of Marin's coastline.

Sincerely,

Frank Dean
General Superintendent

San Francisco Bay National Estuarine Research Reserve
3152 Paradise Drive, Tiburon, CA 94920-1205
Tel (415) 338-3707 Fax (415) 435-7120 Web: www.sfbaynerr.org

July 12, 2013

Mary Small, Deputy Executive Officer
State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

Re: Marin Coast Local Coastal Program Sea Level Rise Adaptation Grant Proposal

Dear Ms. Small:

The San Francisco Bay National Estuarine Research Reserve (SF Bay NERR) is pleased to offer its strong support for the "Collaborating on Sea-level Marin: Adaptation Response Team (C-SMART) project," submitted by the County of Marin and a top tier team of cooperating organizations in response to the Ocean Protection Council, California Coastal Commission and the State Coastal Conservancy's Local Coastal Program Sea Level Rise Adaptation grant program announcement.

The SF Bay NERR's mission is to improve scientific understanding and stewardship of the San Francisco Estuary, with a broader relevance to tidal wetland environments at a national and global scale. We concentrate our programs on two outstanding tidal wetland landscapes, China Camp State Park in Marin County and Rush Ranch Open Space Preserve in Solano County; however, the SF Bay NERR works closely with partners from across the region to achieve its broader goals.

The proposed project supports the objectives of the SF Bay NERR on many levels. First, C-SMART will provide a critical demonstration project that should inform success and challenges associated with climate adaptation approaches in the region. These findings will feed into mutual learning across our different communities of practice, and can be used in future SF Bay NERR Coastal Training Program publications and workshops that serve the entire coastal management community. In addition, the SF Bay NERR has been heavily involved in the Our Coast, Our Future (OCOF) project, as an advisory committee member. The C-SMART project is building off the work established through OCOF and will feed new experience, results and lessons learned on the Marin Coast to the larger OCOF regional effort in the San Francisco Estuary. Finally, as stewards of a highly sensitive ecosystem in Marin County at China Camp, we will learn greatly from the work this project accomplishes on the outer coast to inform climate adaptation approaches at our Reserve sites.

The Marin coast's diverse biological and recreational resources have made this area a national and international treasure. Together with vulnerable human infrastructure in difficult to defend locations, this area is particularly well-suited to be an important pilot for the rest of California's coast. We look forward to supporting this project and learning important lessons in coastal adaptation planning for Marin County and potentially for other coastal habitats beyond.

Michael Vasey, Ph.D.
Interim Director, SF Bay NERR

DEPARTMENT OF PUBLIC WORKS

COUNTY OF MARIN

People serving people.

Robert Beaumont
DIRECTOR

Administration
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415 473 3232 TTY
CRS Dial 711
www.marincounty.org/pw

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Certified Unified Program Agency (CUPA)

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Reprographic Services

Road Maintenance

Stormwater Program

Transportation & Traffic Operations

Waste Management

July 15, 2013

Mary Small, Deputy Executive Officer
State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

RE: Local Coastal Program Sea Level Rise Adaptation C-SMART proposal

Dear Ms. Small:

The Marin County Department of Public Works would like to express our support for the "*Collaborating on Sea-level Marin: Adaptation Response Team (C-SMART)*" proposal submitted by the Marin County Community Development Agency. The Department of Public Works has been engaged in watershed planning with the community of Stinson Beach to develop solutions that integrate flood protection, address sediment issues and enhance habitat along Easkoot Creek and its tributaries. The C-SMART proposal supports our ongoing efforts to provide the community the best available science to address their flooding issues.

The Stinson Beach Watershed Program has recently completed a riverine model and alternatives analysis of potential solutions to address riverine flooding and floodplain enhancement. The final report is a culmination of science from years of data collection by the National Park Service, Stinson Beach County Water District, and the Flood Control Zone 5, as well as recent LiDAR and field surveys in addition to the participation of our stakeholder committees and outreach to the community to build a model and alternatives that benefit the people, habitat, processes of the watershed. Public release of the final report will occur this winter and we expect to work with the community to outline next steps for project development and funding. Timing for this grant will support the next steps to integrate our model with the modeling completed through Our Coast, Our Future and FEMA's California Coastal Analysis and Mapping Project. The Watershed Program will bring our model and study outputs, established stakeholder committees and our outreach website: www.marinwatersheds.org to this process.

We appreciate your consideration of this timely proposal and encourage your full support.

Sincerely,

FOR Bob Beaumont
Director

July 10, 2013

Jack Liebster
Planning Manager; Community Development Agency
County of Marin
3501 Civic Center Drive, Suite 308
San Rafael, CA 94903

Re: Local Coastal Program Sea Level Rise Adaptation Grant Proposal

Dear Mr. Liebster:

The Center for Ocean Solutions and the Natural Capital Project are excited to support your proposal "Collaborating on Sea-level Marin: Adaptation Response Team (C-SMART)," submitted to the Ocean Protection Council, California Coastal Commission and the State Coastal Conservancy's Local Coastal Program Sea Level Rise Adaptation grant program.

The Center for Ocean Solutions and the Natural Capital Project are working with decision makers to develop and apply approaches and tools for climate adaptation planning that consider both people and the environment. Our ultimate aim is to help decision makers like you use the best available science to inform climate adaptation planning.

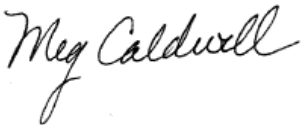
The area's existing collaborations to address current and future challenges posed by climate impacts bring strong merit to this proposal. The coastline of Marin County contains diverse biological and recreational resources, vulnerable human infrastructure, as well as extensive applied research on coastal adaptation strategies that will serve as a an important pilot for the rest of California's coast.

The Center for Ocean Solutions and the Natural Capital Project look forward to working with the project applicants to evaluate ecosystem services and valuation of protecting and restoring critical coastal habitats. Our approach and tools (1) assess the vulnerability of coastal habitat, infrastructure, and communities to various sea-level rise and storm scenarios; (2) quantify benefits that natural habitats provide in reducing vulnerability; and (3) assess the impacts of alternative adaptation strategies on a range of benefits people get from the coast (e.g., opportunities for recreation and tourism, habitat for important fished species).

Jerry Yang & Akiko Yamazaki Environment & Energy Building
473 Via Ortega | Room 193B | Stanford, CA 94305-4205
650.723.4057 **T** | 650.725.3402 **F**
www.centerforoceansolutions.org
www.naturalcapitalproject.org

We are excited to begin this collaboration and support your existing cooperative efforts to address coastal adaptation planning in a rich, diverse area such as Marin County.

Sincerely,



Mary Ruckelshaus
Managing Director
Natural Capital Project
mary.ruckelshaus@stanford.edu

Meg Caldwell
Executive Director
Center for Ocean Solutions
megc@stanford.edu

East Shore Planning Group
P. O. Box 827
Marshall, CA 94940
(415) 663-8184

July 12, 2013

State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

Attn: Mary Small, Deputy Executive Officer

LCP Sea Level Rise Grant
Application of Marin County

Ladies/Gentlemen:

We are pleased to provide this letter in support of the application by Marin County to the Ocean Protection Council, the California Coastal Commission and the State Coastal Conservancy for an LCP Sea Level Rise Grant.

The East Shore Planning Group, a California not-for-profit corporation formed in 1984 ("ESPG"), has a membership about 90 homeowners, tenants and owners of residential and commercial properties on the east shore of Tomales Bay, which is in the unincorporated area of Marin County and is in the Coastal Zone. The ESPG is the primary local organization involved with issues of development in the area, and we have been an active participant with Marin County in the process of amending the Local Coastal Program.

Most of our members own homes and businesses on the shoreline of Tomales Bay, many of which are constructed on pilings a few feet above the water. The only access to the area is by Highway One, which runs along the shoreline at a low elevation, often protected only by riprap and crude bulkheads, and which already becomes impassable during major storm and tide events such as the 1997 *El Niño*.

The issue of sea-level rise and its management is of critical importance to our organization and our members. The urgency of the situation is dramatically seen in the Coastal Commission Staff Report for a recent project by one of our members to rehabilitate and improve an iconic local property, the Marshall Tavern:

> With regard to the specific project site, the Applicant's geotechnical report evaluated the amount of sea level rise that may occur over the next 100 years. The report states the following:
>
> > *The State of California Sea-Level Rise Interim Guidance Document was reviewed. The Marshall Tavern is a historical building and little could be done to protect it in a cost effective manner against a significant 100-year sea level rise. The rise of 7 inches which is the estimated average of the several models used in the guidance document for the year 2030 would not significantly impact the foundation of the structure. The estimated sea level rise of 14 inches, the average*

for the year 2050 would be a concern and anything above that would require significant modifications of the structure.

> Therefore, given these estimates, the structure would be in danger by approximately 2050 (or roughly 38 years after the proposed development). However, although California's Sea Level Rise Guidance Document indicates a range for sea level rise, the Applicant used the average of this range. Therefore, the Applicant's estimates are only the average, and thus given current guidance, the structure may be in danger even sooner. Further, the National Academy of Science's most recent projections for California indicate that sea level rise will likely be higher than currently estimated, with a range between 4-30 centimeters by 2030, 12-61 centimeters by 2050, and 42-167 centimeters by 2100. Considering the higher range of these new estimates, the structure could be in danger soon after 2030 (or approximately 18 years after the proposed development). … . *California Coastal Commission Staff Report for Application Number: 2-06-017, Applicants Daniel Altman and Avi Atid (November 1, 2012), at pp 22-23 (footnotes omitted, emphasis added).*

But homes and business on pilings along the Tomales Bay shoreline are only a part of the concern. Our public infrastructure developments – particularly Highway One and the Marshall Community Septic System – are also at risk, as are the piers and marina developments at Nick's Cove and the Marshall Boat Works. And, the beaches, wetlands and a planned new State Park facility on the east shore of Tomales Bay will also suffer.

Not surprisingly, the East Shore Community Plan, adopted in 1987, does not address the potential impacts of sea-level rise and related climate change impacts (such as wave action from extreme weather events) on our community. And, unfortunately, ESPG does not have and is not in a position to obtain the necessary funds to develop and adopt new plans that conserve and protect our shoreline properties and shoreline infrastructure from impacts from sea-level rise and climate change.

Accordingly, we must look to Marin County and other agencies for assistance in developing plans for our community. Marin County is uniquely qualified to provide this planning assistance. We would look forward to being an active participant in the proposed Stakeholder Advisory Committee.

The East Shore Planning Group strongly encourages the Ocean Protection Council, the California Coastal Commission and the State Coastal Conservancy to favorably consider Marin County's grant application.

Lori Kyle, President

Lori Kyle

East Shore Planning Group

Standard Note: This letter has been authorized by the ESPG Board of Directors, but has not been presented to or approved by our membership.

Liebster, Jack

From: Amy Trainer <amy@eacmarin.org>
Sent: Tuesday, July 16, 2013 1:24 PM
To: msmall@scc.ca.gov
Cc: Liebster, Jack
Subject: Support for Marin County grant application

Dear Ms. Small,

The Environmental Action Committee of West Marin (EAC) would like to express its strong support for Marin County's LCP Sea Level Rise Coastal Adaptation grant request. Since 1971, EAC has been a leader in protecting the waters, wild lands, and biodiversity of West Marin. EAC would be an enthusiastic participant on Marin County's stakeholder panel.

EAC understands that Marin County's approach seeks to combine meaningful and consistent involvement from all the stakeholder with the best available science and technical analysis to develop effective strategies to deal with the long term and constantly evolving problem of sea level rise. EAC strongly supports Marin County's efforts in that regard, and respectfully urges you to provide grant funding to Marin County.

Thank you very much for your consideration.

Best regards,
Amy

Amy Trainer
Executive Director

Environmental Action Committee of West Marin
P.O. Box 609 Point Reyes, CA 94956
amy@eacmarin.org
(415) 663-9312 office
(415) 306-6052 cell

Protecting West Marin for over 40 years!
www.eacmarin.org
www.savepointreyeswilderness.org

west marin environmental action committee
ESTABLISHED 1971

MARIN CONSERVATION LEAGUE

Protecting Marin Since 1934

July 25, 2013

Mary Small, Deputy Executive Officer
State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

Re: Marin Coast Local Coastal Program Sea Level Rise Adaptation Grant Proposal

Dear Ms. Small:

The Marin Conservation League is pleased to join with other leading environmental non-profits in Marin County in offering its strong support for the "Collaborating on Sea-level Marin: Adaptation Response Team (C-SMART) project." The County of Marin, in collaboration with a top tier team of organizations is submitting this grant application in response to the Ocean Protection Council, California Coastal Commission and the State Coastal Conservancy's Local Coastal Program Sea Level Rise Adaptation grant program announcement.

Marin Conservation League, established in 1934 and one of the oldest conservation organizations in the State, was founded at a time when Marin's unprotected scenic lands were about to be threatened by rampant development that would follow the opening of the Golden Gate Bridge. The first targets for public acquisition were on the coast – Stinson Beach, Drakes Beach, Tomales Bay, Pt. Reyes National Seashore, and later, the lands and coast of the Marin Headlands. Since public acquisition, these shorelands have been enjoyed by millions of visitors from around the world. Protecting agricultural lands within the Coastal Zone through restrictive zoning came later and continues to be a conservation priority for MCL.

MCL's interest in the long-term welfare of these shorelands has never wavered, even as the threat has shifted from development to the prospects of radical change to the area's diverse and sensitive biological and recreational resources from the advancing sea, and of serious damage to human infrastructure in difficult to defend locations.

All of Marin's Pacific Ocean shorelands are vulnerable to sea level rise, and it is incumbent on the County to understand that threat and help prepare for it. The grant offers an ideal opportunity to build on efforts that have already used the Marin coast as a laboratory for advancements in adapting to sea level rise. These efforts include Our Coast-Our Future project involving the USGS, Gulf of the

PHONE: 415.485.6257
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EMAIL: mcl@marinconservationleague.org
WEB: marinconservationleague.org
ADDRESS: 175 N. Redwood Dr., Ste. 135
San Rafael, CA 94903-1977

Farallones National Marine Sanctuary, Point Blue Conservation Science and others who have invested over one million dollars in sophisticated modeling and analysis. Working within the framework of the Marin LCP Amendment process, the C-SMART team we have described in our grant application also will be able to utilize existing staff commitment and a public process that is already in place. With all the elements in place, the team will be able to take on the challenge of sea level rise effectively.

The many benefits that can accrue from this project are enumerated in the grant proposal. Among them, MCL would emphasize the important opportunity to better understand and seek alternatives to protecting the sensitive biological resources that qualify the Marin Coast for international significance; to enable the recreational and visitor-serving resources that attract visitors from around the world to continue; and to minimize or avoid damage to the land use and critical infrastructure that have developed in the region.

We look forward to supporting and learning from the important advances this project will make in planning for adaptation to sea level rise on the Marin County coast and for all of California's coast.

Sincerely,

David Schnapf, President

cc: Jack Liebster

Marin County Sheriff
Office of Emergency Services

3501 Civic Center Drive Room 266, San Rafael, CA 94903-4189
(415) 473-6584 FAX (415) 473-7450
www.readymarin.org
oes@marinsheriff.org

January 7, 2013

Mary Small
Deputy Director
State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, CA 94612

RE: Letter of support for Marin County grant application to develop and adopt updated plans for adapting to sea level rise and related changes, and incorporate them into our Local Coastal Plans.

Dear Ms. Small:

The Marin County Sheriff's Office of Emergency Services (OES) fully supports the need for cooperative efforts to develop and implement solutions to the threat of sea level rise on the Marin County coast. A "Collaborating on Sea-level Marin: Adaptation Response Team (C-SMART)" program will ensure essential support to regional and statewide work and local coastal planning pursuant to the Coastal Act.

As a partner on this project, OES would expand collaboration, education and outreach regarding sea-level rise impacts with our local communities and emergency management partners. This project will provide us the opportunity to enhance our Local Hazard Mitigation planning efforts to include coastal hazard mitigation. OES would enhance coordination on extreme weather and tsunami event response and long-range emergency operations planning. Due to recent raised awareness of the Tsunami Threat, we were able to strengthen our partnerships with our Coastal and Inland Bay communities, California's Earthquake and Tsunami Program, NOAA, GGNRA, State and National Parks during emergency response, recovery, training and exercises.

We are currently working to update the County Emergency Operations Plan (EOP), and have included Climate Change/Sea Level Rise in the Hazards and Threat Section, emphasizing future related events, i.e. extreme high tides, storms and coastal erosion. Recognizing OES's responsibility around newly emerging threats on life and the environment, it is imperative to integrate them into all county-wide emergency planning.

The C-SMART grant proposal addresses what Marin County's first priority must be towards finding solutions to sea level rise threats, an integrated assessment of all impacts. Should funding be awarded, OES will fully support this effort, lending our expertise in hazard identification, hazard mitigation, planning, communications and warning, coordination, public education, emergency readiness and response.

With these considerations, I strongly encourage State Coastal Conservancy to consider funding this proposal.

Sincerely,

Chris Reilly
Emergency Services Manager

COUNTY OF MARIN

MARIN COUNTY PARKS
Preservation • Recreation

MARIN COUNTY
PARKS
PRESERVATION · RECREATION

July 31, 2013

Mary Small, Deputy Executive Officer
State Coastal Conservancy
1330 Broadway, 13th Floor
Oakland, California 94612

Subject: Collaborating on Sea Level Rise in Marin: Adaptation Response Team Grant Proposal

Dear Ms. Small:

Marin County Parks is pleased to offer its strong support for the "Collaborating on Sea-Level Rise in Marin: Adaptation Response Team (C-SMART) project." The purpose of this project is to understand the vulnerability of the Marin County coast to sea level rise, define adaptation strategies to increase resilience of Marin's coastal resources, and share lessons learned with others.

Toward this end, the County of Marin, and its team of cooperating organizations, submitted an application in response to the Ocean Protection Council, California Coastal Commission, and the State Coastal Conservancy's Local Coastal Program Sea Level Rise Adaptation grant program announcement.

Marin County Parks manages nearly 20,000 thousand acres of parks and preserves in Marin County, including several recreational areas and natural areas along the coast. These protected areas include the Bolinas Lagoon Preserve, Chicken Ranch Beach Park on Tomales Bay, and Whitehouse Pool on Lagunitas Creek near Pt. Reyes Station. If funded, the proposed C-SMART project will provide valuable information for managing our parks and preserves to accommodate sea level rise.

This project is especially valuable because it builds upon cutting-edge efforts already underway in Marin County. This includes the Our Coast-Our Future project, which involves the U.S. Geologic Survey, Gulf of the Farallones National Marine Sanctuary, Point Blue Conservation Science, and others that have developed sophisticated modeling and analysis that Marin County will incorporate into this project.

Linda Dahl
DIRECTOR
GENERAL MANAGER

Marin County Civic Center
3501 Civic Center Drive
Suite 260
San Rafael, CA 94903
415 473 6387 T
415 473 3795 F
415 473 2495 TTY
www.marincountyparks.org

Thank you for the consideration of this important project to improve coastal adaptation planning for Marin County.

Sincerely,

Linda Dahl
Director and General Manager

c. Jack Liebster